

NOTES TO DESIGNER

- A. THIS DETAIL APPLIES ONLY TO 4-INCH THROUGH 12-INCH PIPE TRANSITIONS. LARGER DIAMETER TRANSITIONS REQUIRE SPECIFIC DESIGN AND APPROVAL.
- B. CHARLOTTE WATER PREFERS JOINING HDPE USING BUTT FUSION JOINING. IF BUTT FUSION IS NOT POSSIBLE THEN ELECTROFUSION FITTINGS ARE ALLOWED. IF ELECTROFUSION FITTINGS ARE NOT POSSIBLE, THEN MECHANICAL FITTINGS ARE ALLOWED. CHARLOTTE WATER DOES NOT ALLOW BURIED FLANGED JOINTS.



NO. DESCRIPTION

- 1. WALL BLOCKING, F
- DETAIL HD4
- 2. RESTRAINED MEC
- REDUCING MECHA
- PIPE STIFFENER R
- 3. WALL ANCHOR OR
 - TO STANDARD DE

TRANSITION NOTES:

- A. FITTINGS SHALL MEET THE REQUIREMENTS OF AWWA C906.
- B. HIGH DENSITY POLYETHYLENE (HDPE) FITTINGS SHALL BE MOLDED OR FABRICATED BY PIPE MANUFACTURER.
- C. MECHANICAL FITTINGS SHALL BE SPECIFICALLY DESIGNED FOR USE WITH HDPE PIPE.
- D. STAINLESS STEEL INTERNAL STIFFENERS SHALL BE INSTALLED IN THE END OF THE HDPE PIPE WHEN HDPE PIPE IS INSERTED INTO THE BELL END OF NON-HDPE PIPE, INTO THE HUB OF A BOLTED COUPLING. INTERNAL STIFFENER CAN BE WEDGE TYPE OR SOLID BODY. STIFFENER WILL BE RATED FOR DR AND ID OF PIPE. FOR WATEI STAINLESS STEEL IS ALLOWED. FOR WASTEWATER, 316 IS REQUIRED.
- E. MECHANICAL JOINT ADAPTERS SHALL BE PE4710 AND CAN BE MADE TO ASTM D3261. IF MACHINED, ADAPTERS MUST MEET THE REQUIREMENTS OF ASTM F2206. ADAPTERS SURE RATING EQUAL TO THE PIPE.
- F. WHEN BELL END IS ENCOUNTERED, FIELD CUT PIPE TO FORM A PLAIN END.

ASBESTOS NOTES:

- A. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE, IS KNOWN TO CONTAIN ASBESTOS CONTAINING MATERIAL (ACM). SPECIAL WASTE MANAGEMENT PRO AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS.
- B. WRITTEN NOTIFICATION TO THE NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES OR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION OF MECK DAYS PRIOR COMMENCING WITH THE REMOVAL OF AC PIPE IS REQUIRED. AT EACH LOCATION SHOWN IN THE PLANS AND/OR IDENTIFIED BY THE CONTRACTOR TO INV CONTRACTOR WILL BE REQUIRED TO REMOVE THE NECESSARY AMOUNT OF AC PIPE TO MAKE THE CONNECTION WITHOUT CREATING ANY FRIABLE MATERIAL. THE CO REMOVE WHOLE SECTIONS OF AC PIPE AND MAKE THE TIE-IN AT THE NEAREST JOINT. CONTRACTOR WILL UNCOVER NO MORE THAN 20-FEET OF AC PIPE AT ANY TIME SHALL BE MINIMIZED. THE CONTRACTOR SHALL REMOVE ANY CUT AC PIPE AND STORE IT IN A SECURE, ENGINEER APPROVED LOCATION FOR EVENTUAL DISPOSAL BY TO PERFORMING THIS WORK, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE OWNER OF THE UTILITY OF THE WORK SCHEDULE 72 HOURS IN ADVANCE OF IF
- C. WHEN WORKING WITH AC PIPES, CONTRACTOR WILL COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND NATIONAL EMISSIONS STANDAU AIR POLLUTANTS (NESHAP) REGULATIONS, INCLUDING BUT NOT LIMITED TO USE OF PERSONAL PROTECTIVE EQUIPMENT, SPECIALIZED TRAINING, ACCREDITATION, US PROCEDURES TO CUT AND REMOVE AC PIPE, AND HANDLING AND DISPOSAL OF AC PIPE AND MATERIAL INCLUDING CONTAMINATED SOIL.
- D. AC PIPE WILL BE ABANDONED BY REMOVAL OR ABANDON IN PLACE BY GROUTING. ALL AC PIPE AND MATERIALS REMOVED WILL BECOME THE PROPERTY OF THE CON CONTRACTOR WILL PROVIDE THE OWNER WITH DISPOSAL RECEIPTS SHOWING PROPER DISPOSAL AT AN AUTHORIZED FACILITY.

	NO SCALE	STANDARD NO.	HD2	VERSION NO. VERSION DATE	1.0 2016-05-12	-
REFER TO STANDARD HANICAL COUPLING OR ANICAL COUPLING. STEEL EQUIRED ON HDPE. FLEX RESTRAINT, REFER TAIL HD4			I KANSI I ON FROM HUPE	TO AC PIPE (4-INCH TO 12-INCH)		
VALVE, FITTING, OR R, 304 OR 316						
TERS SHALL HAVE A				Ŋ		
OCEDURES AND HEALTH KLENBURG COUNTY 10 OLVE AC PIPE, THE ONTRACTOR SHALL E. CUTTING OF AC PIPE Y CONTRACTOR. PRIOR BEGINNING THE WORK. RDS FOR HAZARDOUS				STANDARD DETAIL	HDPE	
SE OF WET WORK)	יידע אב ריבואם אדד אנגע אויע ארידע א



- NO. DESCRIPTION
- ASTM C33 TABLE 1
- OUTSIDE ROAD RIGHT-OF-WAY.
- HDPE EMBEDMENT MATERIAL.
- WIRE TO PIPE.

NOTES:

- INSTALL TRACER WIRE IN A PVC CONDUIT.
- BE ACCOMPLISHED WITH A MECHANICAL TAMPER.
- AT ANY TIME, UNLESS APPROVED BY ENGINEER.
- INSPECTION.

REQUIRED TRENCH WIDTH						
PIPE SIZE (INCHES)	MINIMUM TRENCH WIDTH (INCHES)	MAXIMUM TRENCH WIDTH (INCHES)				
<18	PIPE OD + 12	PIPE OD + 30				
18 to 23	PIPE OD + 12	PIPE OD + 36				
24 to 32	PIPE OD + 24	PIPE OD + 36				

MAXIMUM TRENCH WIDTH NOTES: A. LARGER TRENCH WIDTH ALLOWED TO ACCOMMODATE BUTT FUSION EQUIPMENT AT FUSION LOCATIONS.

NO SCAL NO SCAL STANDARD NG FOR HDPE PIPE
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1. HDPE EMBEDMENT MATERIAL - FINE AGGREGATE ACCORDIN

2. BACKFILL - COMPACT BACKFILL PER ASTM D 698 AND AASHT AS MODIFIED BY NCDOT TO 95% MAXIMUM DENSITY WITHIN A ROAD RIGHT-OF-WAY. FINAL 6-INCHES OF SUBGRADE SHALL COMPACTED TO 100%. 85% MAXIMUM DRY DENSITY REQUIRE

3. WARNING TAPE - 6-INCH WIDE WARNING TAPE INSTALLED 1 F MIN. BELOW GROUND SURFACE AS WELL AS DIRECTLY ABOV

4. TRACER WIRE - CONTINUOUS AWG NO. 12 GAUGE SOLID COF TRACER WIRE WITH 30 MIL THICK BLUE HDPE INSULATION AT BOTTOM OF THE EMBEDMENT LAYER. DO NOT ATTACH TRAC

A. WHERE PIPE IS INSTALLED DEEPER THAN 8 FEET, INSTALL ADDITIONAL TRACER WIRE AT A DEPTH BETWEEN 4 AND 5-FE B. EMBEDMENT SHOULD BE PLACED IN LIFTS, NOT EXCEEDING INCHES IN THICKNESS, AND THEN TAMPED. TAMPING SHOULD

C. A MAXIMUM OF 100 FEET OF OPEN TRENCH WILL BE ALLOWER

D. PERFORM CONDUCTIVITY TEST ON THE TRACER WIRE AT FIN



6'

MINIMUM NUMBER OF FLEX RESTRAINTS BY PIPE SIZE			
HDPE NOMINAL PIPE SIZE (INCHES)	NUMBER OF FLEX RESTRAINTS		
4 THROUGH 8	2		
10 THROUGH 12	3		

NO. DESCRIPTION

- 1. HDPE PIPE
- 2. ELECTROFUSED HDPE FLEX RESTRAINT OR WALL ANCHOR
- 3. CONCRETE WALL BLOCKING F'C = MINIMUM 3.600 PSI.
- INSULATION.

NOTES:

- B. FLEX RESTRAINTS MUST BE RATED AT 8,000 LBS OF FORCE OR HIGHER.

REBAR DETAIL: SIDE VIEW

REBAR NOTES: DETAIL: SIDE VIEW.



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В	EARING CAP	ACITY FOR
	<u>iotes</u> \. E B	A. ENGINEER TO BEARING CAP

APPROX. DE THRUST AT 200 PRESSU	AD END PSI WATER IRE	UNDISTURBED SOIL BEARING	APPROX. SOIL PRESSURE		APPROXIMATE CONCRETE VOLUME	
HDPE NOMINAL PIPE DIAMETER (INCHES)	TOTAL THRUST (POUNDS)	FEET)	BEARING LOAD (LB/SQ FT)	(INCHES)	(CUBIC FEET)	(CUBIC YARD)
4	2,130	15	142	10	20	0.74
6	4,616	15	308	10	20	0.74
8	7,823	15	522	12	24	0.89
10	12,153	15	810	12	24	0.89
12	17,094	15	1,140	14	28	1.04

REBAR SCHEDULE					
TYPE	LENGTH (INCHES)	NUMBER REQUIRED FOR ONE MAT	NUMBER REQUIRED FOR TWO MATS		
VERTICAL	38	6	12		
HORIZONTAL	62	6	12		
DIAGONAL	30	4	8		
HORIZONTAL	24	2	4		

6"

7"

7"

6"

6"

5"

REBAR DIAMETER SCHEDULE						
BAR SIZE	TOTAL REBAR LENGTH (FT)	TOTAL REBAR WEIGHT (LB) ONE MAT	TOTAL REBAR WEIGHT (LB) TWO MATS			
#5	64	67	134			
#5	64	67	134			
#5	64	67	134			
#5	64	67	134			
#5	64	67	134			
	REBAR I BAR SIZE #5 #5 #5 #5 #5	REBAR DIAMETER SCHBAR SIZETOTAL REBAR LENGTH (FT)#564#564#564#564#564	REBAR DIAMETER SCHEDULEBAR SIZETOTAL REBAR LENGTH (FT)TOTAL REBAR WEIGHT (LB) ONE MAT#56467#56467#56467#56467#56467#56467			

4'

4. FLEX RESTRAINTS FOR HDPE PIPE. SEE TABLE FOR REQUIRED NUMBER OF FLEX RESTRAINTS BY PIPE SIZE. COMPLY WITH MANUFACTURERS INSTRUCTIONS FOR NUMBER OF FLEX RESTRAINTS IF GREATER THAN SHOWN IN TABLE. 5. AWG NO. 12 GAUGE SOLID COPPER TRACER WIRE WITH BLUE 30 MIL HDPE

A. WHEN DIRECTED BY THE ENGINEER, THE CONCRETE WALL BLOCK SIZE MAY BE ADJUSTED, BASED ON ACTUAL SOIL CLASSIFICATION AND PIPE DIAMETER.

A. FOR 4 TO 10-INCH PIPE, PLACE ONE REBAR MAT AT LOCATION B ON THE REBAR DETAIL: SIDE VIEW. B. FOR 12-INCH PIPE, PLACE TWO REBAR MATS - ONE AT LOCATION A AND ONE AT LOCATION C ON THE REBAR

ADEQUATE SOIL PRESSURE R THRUST BLOCK

-	_		X	
			NO S(CALE
			STANDA	RD NO.
CHARLOTTE	CHARLOTTE WATER	CONCRETE WALL BLOCKING	H	4
	STANDARD DETAILS	FOR HDPE PIPE (4-INCH TO 12-INCH)	VERSION NO.	VERSION DATE
)	HDPE		1.0	2016-05-12



MINIMUM NUMBER OF FLEX RESTRAINTS BY PIPE SIZE				
HDPE NOMINAL PIPE SIZE (INCHES)	NUMBER OF FLEX RESTRAINTS			
14	4			
16	6			
18	7			
24	10			
32	17			

- 1. HDPE PIPE
- 2. ELECTROFUSED HDPE FLEX RESTR
- 3. CONCRETE WALL BLOCKING F'C =
- 4. FLEX RESTRAINTS FOR HDPE PIPE. RESTRAINTS BY PIPE SIZE. COMPL FOR NUMBER OF FLEX RESTRAINTS
- 5. AWG NO. 12 GAUGE SOLID COPPER INSULATION.

NOTES:

A. WHEN DIRECTED BY THE ENGINEER ADJUSTED, BASED ON ACTUAL SOI

B. FLEX RESTRAINTS MUST BE RATED



RAINT = MININ . SEE T _Y WIT S IF GI R TRA	OR WALL ANCH //UM 3,600 PSI. /ABLE FOR REC H MANUFACTU REATER THAN CER WIRE WITH	IOR QUIRED NU RERS INST SHOWN IN I BLUE 30 N	MBER OF F RUCTIONS TABLE. 11L HDPE	NO SCALE	STANDARD NO. HD5	VERSION NO. VERSION DATE 2016-05-12	
R,THE IL CLAS D AT 8,	CONCRETE WASSIFICATION AN 000 LBS OF FO	ALL BLOCK ND PIPE DI, RCE OR HIG	SIZE MAY AMETER. GHER.	BE	OCKING	TO 32-INCH)	
32-INC A AND	H PIPE, PLACE LOCATION C O	REBAR MA N THE REB	ITS BOTH A	AT .:	CONCRETE WALL BL	FOR HDPE PIPE (14-INCH	
ROX.	CONFIRM ADEO ACITY FOR THR W MINIMUM WIDTH	QUATE SOII UST BLOCK APPRO2 CONCRETE		RE	LOTTE WATER	IDARD DETAILS HDPE	
AD Q FT)	(INCHES)	(COBIC FEET)	(CUBIC YARD)		CHAF	STAN	
17	16	67	2 47			\sim	AENT
36	16	67	2.47		"		AT A A
02	18	75	2.78		5		L L
19	18	75	2.78			5	5 10
55	22	92	3.40		H H	Ž	10,10
89	22	92	3.40]		>) TEC
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- 1. HDPE PIPE
- 2. CONDUIT 1 INCH PVC CONDUIT
- 3. CONCRETE ENCASEMENT (F'C=
- 4. STONE STABILIZATION MATERIA
- 5. TRACER WIRE CONTINUOUS TRACER WIRE WITH 30 MIL THIC BOTTOM OF THE UTILITY SAND
- 6. NEOPRENE FOAM PROTECTIVE
- 7. HDPE EMBEDMENT MATERIAL -C33 TABLE 1.
- 8. #5 REBAR LONG (TYP)
- 9. #4 REBAR TIES MINIMUM 1.5-IN 3-INCH COVER

NOTES:

- CONCRETE ENCASEMENT SHAL Α. APPROVED PLANS OR WITH PR
- B. THIS RESTRICTION IS IN PLACE MAINTAIN/REPAIR OR TAP A MA
- C. ENGINEER TO CONFIRM TEMPE WILL BE LESS THAN THE HDPE

r

Pipe Diameter (inches)	min W (in)
4	31
6	33
8	36
10	38
12	40
14	42
16	44
18	46
20	48
22	50
24	52
26	54
28	56
30	58
32	60

NOTES TO DESIGNER

T TO CON ₌3600 PSI M AL AS REC AWG NO. 1 CK, BLUE F	TAIN TRACER V MIN). QUIRED 12 GAUGE SOLII 1DPE INSULATI	VIRE D COPPER ON AT THE	NO SCALE	STANDARD NO. HD6	VERSION NO. VERSION DATE	1.0 2016-05-12
	ENT LAYER. IG, $\frac{1}{4} - \frac{3}{4}$ INCH T	HICKNESS.			Ц	
FINE AGG	REGATE ACCC	IRDING TO ASTM			ד	
NCH CLEAI	RANCE TO PIPE	E, MINIMUM			НОРН	
LL ONLY B IOR APPR DUE TO T IN ENCAS RATURE F VICAT SO	E INSTALLED V OVAL BY CLT V THE INABILITY T ED IN CONCRE FROM CONCRE FTENING TEMP	VHERE SHOWN ON VATER ENGINEER. TO EASILY TE. TE CURING AT SITE PERATURE OF 260°F.			CASEMENI FOR	
nin H (in)	FT^3 / LF	CY / LF				
25	5.29	0.20				
27	5.99	0.22			Ň	
30	7.15	0.26			Z	
32	7.90	0.29			\mathbf{c}	
34	8.66	0.32				
36	9.43	0.35			1	\square
38	10.21	0.38		Ř	lo	
40	11.01	0.41		∆ TE	F	ĸ
42	11.82	0.44		Š		
44	12.64	0.47		Ш		Š
46	13.47	0.50		0	AR	Щ.
48	14.31	0.53		R		ם ם
50	15.17	0.56		HA H	STA	╧│
52	16.04	0.59				
54	16.91	0.63			\sim	
IS MINIMUN PRIATE TO S	M REQUIRED. SE SPECIFIC CONDIT	aling Engineer Shal Ions and Loads.	L	CHARLOTTE	WATEF	

A. CONCRETE AND REINFORCEMENT IS MINIMUM REQUIRED. SEALING ENGINEER SHALL DESIGN REINFORCEMENT APPROPRIATE TO SPECIFIC CONDITIONS AND LOADS.



- 1. HDPE WATER MAIN
- 2. HDPE PIPE
- 3. ELECTROFUSION COUPLING OR RESTRA STAINLESS STEEL STIFFENER AND ACCE DETAIL HD1 FOR TRANSITION DETAIL.
- 4. CONCRETE BLOCK 8-INCH BY 16-INCH
- 5. RESILIENT SEAT GATE VALVE
- 6. FOR CONNECTION TO NEW CONSTRUCT HD8. FOR CONNECTION TO EXISTING MA
- 7. VALVE BOX ASSEMBLY SEE CLT WATER
- 8. CONCRETE HYDRANT COLLAR. CAST IN 8-INCH THICK.
- 9. MINIMUM 9 CUBIC FEET OF #57 OR #67 W PROPORTIONALLY AROUND BASE. DO N
- 10. HYDRANT PER CLT WATER SPECIFICATION
- 11. SEE CLT WATER TRACER WIRE STANDAI METHOD.
- 12. AWG. NO. 12 GAUGE SOLID COPPER TR/ HDPE INSULATION

NOTES:

- A. HYDRANT LOCATION: ON ROADS WITH CU CLT WATER STANDARD DETAIL FOR FIRE OTHERWISE NOTED BY ENGINEER.
- B. BURIAL TO BE MINIMUM 3-FOOT 6-INCHES BY THE ENGINEER.
- C. EXTENSIONS REQUIRED AS DETERMINED MORE THAN ONE HYDRANT EXTENSION IS USED, NO NOT CAST HYDRANT COLLAR OI
- D. ON ROADS WITHOUT SIDE DITCH OR CURI FOOT INSIDE THE ROAD RIGHT OF WAY
- E. ON ROADS WITH SIDE DITCH, FIRE HYDRA MINIMUM OF 4-FEET BACK OF SIDE DITCH.

VERSION DATE 2016-05-12	N NO.	versio				R HDPE PIPE	О Ц				6	STANDARD DETAILS HDPE - WATER	
RD NO. 7	STANDA HD				Z	NT CONNECT	DRA	Η			R	CHARLOTTE WATE	CHARLOTTE
CALE	NO S(2											
	NED MJ ADAPTER WITH SSORY KIT. SEE STANDARD	SOLID CONCRETE BLOCK	DN SEE STANDARD DETAIL N SEE STANDARD DETAIL HD7. STANDARD DETAIL. LACE. 3-FEET DIAMETER BY	ASHED STONE DT COVER WEEP HOLE. NS	D DETAILS FOR TERMINATION		B AND GUTTER, USE EXISTING YDRANTS IN ALL CASES UNLESS	INLESS OTHERWISE DIRECTED	BY THE ENGINEER,HOWEVER NO ALLOWED. IF EXTENSION IS EXTENSION JOINT. , HYDRANT SHALL BE LOCATED 1	IT SHALL BE LOCATED A			



- 1. ELECTROFUSION TAPPING SADDLE OR STAINLESS **TAPPING SLEEVE WITH**
- 2. FLxMJ TAPPING VALVE. HD11.
- HDPE PIPE 3.
- STANDARD VALVE BOX 4. 5. AWG NO. 12 GAUGE SC
- 30 MIL HDPE INSULATIC 6. CONCRETE THRUST BL
- 7. TRENCH LIMITS
- EXISTING HDPE WATER 8.
- 9. UNDISTURBED NATIVE
- 10. HDPE PIPE BUTT FUSIO
- 11. BUTT FUSED BRANCH

NOTES:

- A. BRANCH LARGER THAN
- B. FOR EXISTING HDPE MA OR BUTT FUSED BRANC

Т TYPE OF FI TAP SIZE (I 4 6 8 10 12 14 16 18 20 24 30 32

- THRUST BLOCK NOTES: A. THRUST BLOCKS TO BI B. THRUST BLOCKS TO BE C. JOINTS TO BE KEPT FR AROUND NUTS AND BC (HDCLPE PER AWWA C D. AREAS GIVEN ARE FOR SOIL WITH 2,000 PSI BE CONDITIONS AND APPROVAL OF THE ENGINEER. E. TAPPING SLEEVES SHALL HAVE THRUST BLOCKS SIZED BASED ON
- TAP SIZE.

PING SADDL I OUTLET S . REFER TC (ASSEMBL' DLID COPPI DN.	LE OR STAINLESS STEEL EAL GASKET. O STANDARD DETAIL HD1 Y ER TRACER WIRE WITH B	0 AND LUE	NO SCALE	STANDARD NO. HD8	VERSION NO. VERSION DATE 0.0 2016-05-12	
LOCK (SEE R MAIN SOIL DN JOINT SADDLE N THE EXIS ^T AIN, USE EI CH SADDLE	TABLE FOR SIZING) TING MAIN IS NOT ALLOW LECTROFUSION TAPPING	'ED. SADDLE		JD VALVE	TO 32-INCH)	
THRUST BL	OCK TABLE			A	CH	
ITTING	TEE OR DEAD END				Ż	
NCHES)	TOTAL REQUIRED BEARING AREA (FT²)				П (4	
	1.3			S		
	2.9					
	5.1				E	
	7.9			AP	Ц	
	11.4			$ $ \vdash	Ř	
	15.7				О Ц	
	20.1					
	25.8					
	31.4					
	45.3			~		
	70.7				<u>ہ ا</u>	
	80.4			N N		
E 3,600 PSI	CONCRETE. AGAINST UNDISTURBED	SOIL.		CHARLOTTE	STANDARD DI HDPE - WA	
REE OF CO OLTS. WRA C-105). EAC R DR 9 PIPE EARING CA ROVAL OF ALL HAVE 1	NGRETE. ALLOW WORKIN P FITTING WITH 2 LAYER H LAYER MINIMUM 4 MIL AT TEST PRESSURE OF PACITY. CHANGES SUBJE THE ENGINEER. FHRUST BLOCKS SIZED B	AG ROOM S HDPE FILM S THICK. 200 PSI IN ECT TO FIELD ASED ON)	CHARLOTTE	WUTER	דע אב אשעים אידב אבטעבאאנגאיד



3. FULL BODY STAINLESS STEEL MJ BRANCH SLEEVE WITH 4. CONCRETE THRUST BLOCK (SEE TABLE FOR SIZING)

A. BRANCH LARGER THAN MAIN IS NOT ALLOWED. B. IF COMPLETE SHUT OFF IS POSSIBLE ON EXISTING HDPE MAIN, U BUTT FUSION MOLDED TEE. IF SHUT OFF IS NOT POSSIBLE, CONFIRM WITH CHARLOTTE WATER INSPECTOR THAT MECHANIC

THRUST BL	OCK TABLE
F FITTING	TEE OR DEAD END
PLAN VIEW	
E (INCHES)	TOTAL REQUIRED BEARING AREA (FT ²)
4	2
6	2.5
8	4.5
10	7
12	10
14	14
16	18
18	22
20	27

A. THRUST BLOCKS TO BE 3,600 PSI CONCRETE.

B. THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL. C. JOINTS TO BE KEPT FREE OF CONCRETE, ALLOW WORKING ROC AROUND NUTS AND BOLTS. WRAP FITTING WITH 2 LAYERS HDPE FILE (HDCLPE PER AWWA C-105). EACH LAYER MINIMUM 4 MILS

D. AREAS GIVEN ARE FOR DR 11 PIPE AT TEST PRESSURE OF 200 P IN SOIL WITH 2,000 PSI BEARING CAPACITY, CHANGES SUBJECT TO FIELD CONDITIONS AND APPROVAL OF THE ENGINEER. E. TAPPING SLEEVES SHALL HAVE THRUST BLOCKS SIZED THE SAM

DM E PSI ME		CHARLOTTE CHARLOTTE WATER CUT-IN T	WULK STANDARD DETAILS	HDPE	
JSE CAL		JT-IN TEE FOR EXISTING HDPE PIPE	(4-INCH TO 32-INCH)		
NO SC	STANDAR	HD9	VERSION NO.	1.0	
ALE	ON O.		/ERSION DATE	016-05-12	



- 1. CONCRETE WALL BLOCKING
- 2. TRANSITION COUPLING IF RI HD1)
- 3. TO PREVENT THE OVER-BE MANUFACTURER SPECIFIED RADIUS REQUIREMENTS CA RADIUS BEND FITTINGS ARE
- 4. NEW HDPE PIPE MINIMUM STORM PIPE OF STRAIGHT I STORM DRAIN PIPE.
- 5. TRENCH LIMITS
- 6. STORM DRAIN (OR PROPOS
- 7. ROD BEND TO WALL BLOCK ROD MATERIAL MUST BE CO CORROSION INHIBITING SUB
- 8. TIE ROD THE CONNECTING SHALL BE MADE OF LOW ALL ANSI/AWWA C111/A21.11.
- STEEL CASING PIPE REQU DIAMETER OR LARGER OR I CULVERT. REFER TO STEEL DETAIL.

NOTES

- A. ALL HDPE PIPE SHALL HAV FITTINGS.
- B. EMBEDMENT OF WATER M
- C. IF THE EXISTING PIPE IS H PIPE AS-IS TO ACHIEVE LC PIPE MUST BE INSTALLED NEEDED TO ACCOMMODA
- D. LOWERED PIPE MUST BE NIS NOT ALLOWED.

ADIUS TABLI
MINIMUN RADIUS
90
13
17
21
25
32
40
48
60
64

ENDING OF H ENDING OF H D BEND RADI NNOT BE ME E ALLOWED. LENGTH IS 1 RUN OF PIPE	DF US T, 0 F	TANDARD DETAIL ER TO STANDARD E, A MIN. 1.50 TIM IS ALLOWED. IF THEN BUTT FUSE EET PLUS DIAME ND CENTERED UN	HD4) 9 DETAIL IES THE BEND ID LONG TER OF IDER	NO SCALE	STANDARD NO.	HD10	VERSION NO. VERSION DATE	1.0 2016-05-12
GED CONFLIC IF TRANSITIO DRROSION-R BSTANCE. G TIE RODS T LOY STEEL 1	T) ON ES THA	I IS NOT SELF-RES SISTANT AND COVI AT JOIN THE TWO AT CONFORMS TO	STRAINED. ERED IN RINGS			12-INCH	DPF	<u>r</u>
IRED IF STOI IF REQUIRED . CASING FOI	RM) IF R H	I PIPE IS 72-INCHE STORM CONFLIC IDPE PIPE STAND	S T IS A BOX ARD			INCH TO	H UNISII	
/E BUTT FUS IAIN SHALL B IDPE, CONTR IWERING. HD TO PROVIDE	SED SE SAC OPE E T	D JOINT OR ELECT PER STANDARD D CTOR MAY NOT DE FITTINGS OR NE	ROFUSED ETAIL HD3. FLECT W HDPE			ING OF 6	FFR MAII	
TE A WATER NEW MATERI	M.	AIN LOWERING.	INGTH			LOWER	LMA7	
TE A WATER NEW MATERI	. M. IAL	AIN LOWERING. REUSE OF EXIS	NGTH TING PIPE			ER LOWER	_s	
TE A WATER NEW MATERI LE JM BEND S (FEET)	M.	TIE ROE MAIN SIZE (INCHES)	NGTH TING PIPE D TABLE TIE ROD SIZI (COUNT - INC	E H)		WATER LOWER	ETAILS WA	TER
TE A WATER NEW MATERI LE JM BEND S (FEET) 90	M.	TIE ROE MAIN SIZE (INCHES)	NGTH TING PIPE TABLE TIE ROD SIZI (COUNT - INC 4 - $\frac{3}{4}$ X 13	E H)		IE WATER LOWER	D DETAILS WA	WATER
TE A WATER NEW MATERI JM BEND S (FEET) 90 33	M.	TIE ROE MAIN SIZE (INCHES) 4 6	TING PIPE TING PIPE TIE ROD SIZI (COUNT - INC) $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$	E H)		OTTE WATER LOWER		PE - WATER
TE A WATER NEW MATERI JM BEND S (FEET) 90 33 73		TIE ROE MAIN SIZE (INCHES) 4 6 8	ENGTH TING PIPE D TABLE TIE ROD SIZE (COUNT - INC $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$	E H)		ARLOTTE WATER LOWER		HDPE - WATER
TE A WATER NEW MATERI LE JM BEND S (FEET) 90 33 73 215	M. IAL	TIE ROUSE OF EXIS	ENGTH TING PIPE DTABLE TIE ROD SIZI (COUNT - INC) $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 18$	E H)		CHARLOTTE WATER LOWER	STANDARD DETAILS	HDPE - WATER
TE A WATER NEW MATERI JM BEND S (FEET) 90 33 73 215 255	M. IAL	TIE ROI MAIN SIZE (INCHES) 4 6 8 10 12	ENGTH TING PIPE TIE ROD SIZI (COUNT - INC) $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 18$ $8 - \frac{3}{4} \times 18$	E H)		CHARLOTTE WATER LOWER	STANDARD DETAILS	HDPE - WATER
TE A WATER NEW MATERI LE JM BEND S (FEET) 90 33 73 215 255 320		TIE ROE MAIN SIZE (INCHES) 4 6 8 10 12 16	ENGTH TING PIPE TIE ROD SIZI (COUNT - INC) $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 18$ $8 - \frac{3}{4} \times 18$ $10 - \frac{3}{4} \times 18$	E H)		CHARLOTTE WATER LOWER		HDPE - WATER
TE A WATER NEW MATERI LE JM BEND S (FEET) 90 33 73 215 255 320 400	M.	TIE ROE MAIN SIZE (INCHES) 4 6 8 10 12 16 20	ENGTH TING PIPE DTABLE TIE ROD SIZI (COUNT - INC $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 18$ $8 - \frac{3}{4} \times 18$ $10 - \frac{3}{4} \times 18$ $12 - \frac{3}{4} \times 18$	E H)		CHARLOTTE WATER LOWER	EK STANDARD DETAILS WA ^T	HDPE - WATER
TE A WATER NEW MATERI LE JM BEND S (FEET) 90 33 73 215 255 320 400 480 200		TIE ROE MAIN SIZE (INCHES) 4 6 8 10 12 16 20 24	ENGTH TING PIPE D TABLE TIE ROD SIZI (COUNT - INC $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 18$ $10 - \frac{3}{4} \times 18$ $12 - \frac{3}{4} \times 18$ $14 - \frac{3}{4} \times 18$	E H)		ALIOTTE CHARLOTTE WATER LOWER	ULEK STANDARD DETAILS WA	HDPE - WATER
TE A WATER NEW MATERI JM BEND S (FEET) 90 33 73 215 255 320 400 80 300 340	M	TIE ROI MAIN SIZE (INCHES) 4 6 8 10 12 16 20 24 30	ENGTH TING PIPE TIE ROD SIZE (COUNT - INC $4 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $6 - \frac{3}{4} \times 13$ $8 - \frac{3}{4} \times 13$ $10 - \frac{3}{4} \times 18$ $10 - \frac{3}{4} \times 18$ $12 - \frac{3}{4} \times 18$ $14 - \frac{3}{4} \times 18$ $16 - 1 \times 18$	E H)		CHARLOTTE CHARLOTTE WATER LOWER	NOILR STANDARD DETAILS	HDPE - WATER

- 1. HDPE WATER MAIN
- 2. BUTT FUSED JOINT OR RESTRAINED MJ ADAPTER WITH STAINLESS STEEL STIFFENER AND ACCESSORY KIT. SEE STANDARD DETAIL HD1 FOR TRANSITION DETAIL.
- 3. GATE VALVE.
- 4. VALVE BOX ASSEMBLY. SEE STANDARD DETAIL.
- 5. TRACER WIRE TERMINATION.
- 6. TRACER WIRE CONTINUOUS AWG NO. 12 GAUGE SOLID COPPER TRACER WIRE WITH 30 MIL THICK BLUE HDPE INSULATION
- 7. CONCRETE BEARING BLOCK FOR 10-INCH AND LARGER GATE VALVES. POLYETHYLENE WRAP BARRIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. WRAP SHALL BE TWO LAYERS OF 4 MIL THICK HDCLPE.

NOTES:

- A. MJ ADAPTER KIT SHALL INCLUDE BOLTS AND NUTS, GRADE 3 OR HIGHER AND LONG ENOUGH TO ACCOMMODATE THE ADDED LENGTH OF HDPE FITTING TO ATTACH TO VALVES.
- B. CHARLOTTE WATER ALLOWS THE INSTALLATION OF DIFFERENT PIPE MATERIALS ON EITHER SIDE OF THE GATE VALVE. INSTALL TRANSITIONS PER STANDARD DETAIL HD1 FOR HDPE.
- C. IF VALVE OPERATING NUT IS MORE THAN 3 FEET BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2-INCH SQUARE OPERATING NUT IN TOP SECTION OF VALVE BOX. SEE STANDARD DETAIL.



NOTES TO DESIGNER

- A. ENGINEER IS RESPONSIBLE FOR DESIGN OF PAVEMENT REPAIR AND FOR A DESIGN THAT DOES NOT ALLOW LOADING TRANSFER TO VALVE.
- B. ENGINEER TO SPECIFY SIZE OF BEARING PAD BASED ON GEOTECHNICAL REPORT OF SOIL CONDITIONS.

			SON	CALE
	CHABLOTTE WATER		STAND	ARD NO.
		GATE VALVE FOR HUPE PIPE	Ŧ	011
	STANDARD DETAILS	(3-INCH TO 12-INCH)	VERSION NO.	VERSION DATE
)	HDPE - WATER		1.0	2016-05-12



				ATE	-12
STANDARD DETAIL.	ALE	NO.		ERSION D	016-05
ER STANDARD DETAIL.	202	NDARC	HD12	> 	اہ ا
IO. 12 GAUGE SOLID COPPER JE HDPE INSULATION INCH AND LARGER GATE VALVES. LL BE PRESENT BETWEEN BEARING IWO LAYERS OF 4 MIL THICK	NO	STAN	ي م	VERSION NO.	1.0
NLESS STEEL STIFFENER AND D DETAIL.			= VALVE	NCH)	
RESTRAINED MJ ADAPTER WITH CCESSORY KIT. SEE STANDARD DETAIL				TO 32-I)
TS AND NUTS, GRADE 3 OR HIGHER TE THE ADDED LENGTH OF HDPE			S S S	NCH	
TALLATION OF DIFFERENT PIPE GATE VALVE. INSTALL TRANSITIONS E. HAN 3 FEET BELOW FINISHED GRADE, NDARD 2-INCH SQUARE OPERATING SEE STANDARD DETAIL. ANHOLE COVER DETAIL.			I AL INSI ALLA I	HDPE PIPE (16-	
METHOD B			Z	R T	
				S S	
4 MIN. —				ETAIL:	LER
CTION 10"			CHARLOILE	STANDARD DE	HDPE - WA
				LTER)

ELEVATIONS

METHOD A - IN SHOULDER



METHOD B - IN PAVEMENT



PROFILE VIEW -(12) (3) 6)-

SIDE VIEW

(7)



PLAN: PRECAST CONCRETE PAD

REFER TO STANDARD DETAIL

SECTION

- PRECAST CONCRETE PAD (REINFOR 9.
- 10. 12 INCH (MIN.) DIP OR C900 PVC DR18
- 11. RESTRAINED MJ ADAPTER WITH STAI ACCESSORY KIT. SEE STANDARD DET
- 12. EXTENSION STEM ASSEMBLY. REFER
- 13. FINISHED GRADE

- 14. RESTRAINED MJ ADAPTER WITH STAI ACCESSORY KIT.
- 15. THRUST BLOCK. REFER TO STANDAR

NOTES:

- Α. CONNECT VALVE TO HDPE LINE WITH STAINLESS STEEL STIFFENER AND AC HD1 FOR TRANSITION DETAIL.
- B. CHARLOTTE WATER ALLOWS THE INST MATERIALS ON EITHER SIDE OF THE C PER STANDARD DETAIL HD1 FOR HDP
- C. IF VALVE OPERATING NUT IS MORE TH PROVIDE EXTENSION STEM WITH STA NUT IN TOP SECTION OF VALVE BOX.
- D. REFER TO STANDARD DETAIL FOR MA

NOTES TO DESIGNER

- ENGINEER IS RESPONSIBLE FOR DEPTH Α.
- B. ENGINEER IS RESPONSIBLE FOR BEARIN
- C. ENGINEER TO SPECIFY SIZE OF BEARING SOIL CONDITIONS.



(14)

PLAN VIEW

(14)

NO. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.	DESCRIPTION FRAME AND COVER ASSEMBLY. SEE STANDARD DETAIL. TRACER WIRE TERMINATION. VALVE BOX ASSEMBLY. SEE STANDARD DETAIL. GATE VALVE - VERTICALLY ORIENTED TRACER WIRE - CONTINUOUS AWG NO. 12 GAUGE SOLID COPPER TRACER WIRE WITH 30 MIL THICK BLUE HDPE INSULATION BEARING BAR FOR VALVE BOX. POLYETHYLENE WRAP BARRIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. BEARING BLOCK FOR VALVE. PRECAST CONCRETE BEAM (REINFORCED) PRECAST CONCRETE PAD (REINFORCED) PRECAST CONCRETE PAD (REINFORCED). SEE STANDARD DETAIL. 12 INCH (MIN.) DIP OR C900 PVC DR18 RISER PIPE 20 INCH MAXIMUM RESTRAINED MJ ADAPTER WITH STAINLESS STEEL STIFFENER AND ACCESSORY KIT. SEE STANDARD DETAIL HD1 FOR TRANSITION DETAIL. FINISHED GRADE RESTRAINED MJ ADAPTER WITH STAINLESS STEEL STIFFENER AND ACCESSORY KIT. THRUST BLOCK. REFER TO STANDARD DETAIL.	NO SCALE	OF GATE VALVES HD13 HD13	CH TO 32-INCH) VERSION NO. VERSION DATE 1.0 2016-05-12	_
NOT A. B. C. D. N A B C	 <u>ES:</u> CONNECT VALVE TO HDPE LINE WITH RESTRAINED MJ ADAPTER WITH STAINLESS STEEL STIFFENER AND ACCESSORY KIT. SEE STANDARD DETAIL HD1 FOR TRANSITION DETAIL. CHARLOTTE WATER ALLOWS THE INSTALLATION OF DIFFERENT PIPE MATERIALS ON EITHER SIDE OF THE GATE VALVE. INSTALL TRANSITIONS PER STANDARD DETAIL HD1 FOR HDPE. IF VALVE OPERATING NUT IS MORE THAN 3 FEET BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2-INCH SQUARE OPERATING NUT IN TOP SECTION OF VALVE BOX. SEE STANDARD DETAIL. REFER TO STANDARD DETAIL FOR MANHOLE COVER DETAIL. REFER TO STANDARD DETAIL FOR MANHOLE COVER DETAIL. ENGINEER IS RESPONSIBLE FOR DEPTH REQUIREMENTS. ENGINEER IS RESPONSIBLE FOR BEARING BLOCK STRUCTURAL DESIGN. ENGINEER TO SPECIFY SIZE OF BEARING BLOCK BASED ON GEOTECHNICAL REPORT OF SOIL CONDITIONS. 		VERTICAL INSTALLATION	FOR HDPE PIPE (16-IN	
()			CHARLOTTE WATER	STANDARD DETAILS HDPE - WATER	
			CHARLOTTE	W	ן ודע אב אנוע איז



- 1. PRECAST CONCRETE BEAM (REINFO
- 2. PRECAST CONCRETE PAD (REINFOR
- 3. 12 INCH (MIN.) DIP OR C900 PVC DR1
- **RESTRAINED MJ ADAPTER WITH ST** 4. ACCESSORY KIT. SEE STANDARD DI
- 5. TRACER WIRE CONTINUOUS AWG WIRE WITH 30 MIL THICK BLUE HDPE
- 6. EXTENSION STEM ASSEMBLY. REFE
- 7. WASHED #57 OR #67 STONE-MINIMU
- 8. HDPE WATER MAIN.
- CONCRETE BEARING BLOCK FOR 10 9. POLYETHYLENE WRAP BARRIER SHA BLOCK AND VALVE. WRAP SHALL BE
- 10. MJ X MJ BUTTERFLY VALVE.
- 11. DIPS MJ ADAPTER
- 12. DIP SPOOL PIECE WITH RESTRAINT

NOTES:

- A. MJ ADAPTER KIT SHALL INCLUDE BC
- B. PROVIDE REDUCERS PRIOR TO MJ IPS PIPE SIZE IS NOT COMPATIBLE CHARLOTTE WATER DOES NOT TYP
- C. CHARLOTTE WATER ALLOWS THE IN MATERIALS ON EITHER SIDE OF THE TRANSITIONS PER STANDARD DETA
- C. IF VALVE OPERATING NUT IS MORE PROVIDE EXTENSION STEM WITH ST NUT IN TOP SECTION OF VALVE BOX
- D. REFER TO STANDARD DETAIL FOR

NOTES TO DESIGNER

A. ENGINEER TO SPECIFY SIZE OF BEARING CONDITIONS.

DR 9 IP HDPE SI (INCH)
8
10
12
14
16
18
20
22
24
26
30
32

SIDE VIEW

SECTION

10"





UM 6 FEET ON EACH SIDE OF VALVE. D-INCH AND LARGER GATE VALVES. ALL BE PRESENT BETWEEN BEARING TWO LAYERS OF 4 MIL THICK HDCLPE. HARNESS. DLTS AND NUTS, GRADE 3 OR HIGHER. ADAPTER IN NEXT LOWER PIPE SIZE IF WITH AVAILABLE DIPS VALVE SIZES. PICALLY USE 18-INCH VALVES. NSTALLATION OF DIFFERENT PIPE E BUTTERFLY VALVE. INSTALL AIL HD1 FOR HDPE. THAN 3 FEET BELOW FINISHED GRADE, TANDARD 2-INCH SQUARE OPERATING K. SEE STANDARD DETAIL. MANHOLE COVER DETAIL
HARNESS. DLTS AND NUTS, GRADE 3 OR HIGHER. ADAPTER IN NEXT LOWER PIPE SIZE IF WITH AVAILABLE DIPS VALVE SIZES. PICALLY USE 18-INCH VALVES. NSTALLATION OF DIFFERENT PIPE E BUTTERFLY VALVE. INSTALL AIL HD1 FOR HDPE. THAN 3 FEET BELOW FINISHED GRADE, TANDARD 2-INCH SQUARE OPERATING K. SEE STANDARD DETAIL. MANIHOLE COVER DETAIL
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PAD BASED ON GEOTECHNICAL REPORT OF SOIL
VALVE SIZE TABLE
S ZE IPS REDUCER MJ ADAPTER VALVE SIZE (IPS X DIPS) (INCH)
N/A 10 x 10 10
N/A 12 x 12 12 ш о о
N/A 14 x 14 14
N/A 16 x 16 16
18 x 16 16 x 16 16 16
N/A 20 x 20 20 0
22 x 20 20 x 20 20
N/A 24 x 24 24
26 x 24 24 x 24 24
N/A 30 x 30 30
32 x 30 30 x 30 30

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INSTALL AIR RELEASE VALVES ON THE LOW SIDE OF 16-INCH AND LARGER VALVES Β. AS DIRECTED BY ENGINEER.

VALVE AND B.O. SHALL NOT BE PLACED IN ROAD DITCH. С.

ITEM LIST FOR 6-INCH AIR RELEASE

NO. DESCRIPTION

- 6-INCH GATE VALVE. SEE STANDARD DETAIL 1.
- FIRE HYDRANT ASSEMBLY PER STANDARD DETAIL 2.
- 3. 6-INCH HDPE PIPE.
- TRACER WIRE CONTINUOUS AWG NO. 12 GAUGE SOLID 4. COPPER TRACER WIRE WITH 30 MIL THICK BLUE HDPE INSULATION.
- 5. RESTRAINED MJ ADAPTER WITH STAINLESS STEEL STIFFENER AND ACCESSORY KIT. SEE STANDARD DETAIL FOR TRANSITION DETAIL.
- HDPE BUTT FUSION TEE 6.
- HDPE WATER MAIN 7.
- VALVE BOX ASSEMBLY. SEE STANDARD DETAIL 8.
- 24-INCH DIAMETER REINFORCED CONCRETE PAD 9.
- 10. #57 OR #68 WASHED STONE-ENCASEMENT
- 11. CONCRETE HYDRANT COLLAR. CAST IN PLACE. 3-FEET DIAMETER BY 8-INCH THICK.

NOTES:

- Α. ALL PIPE, FITTINGS, ETC. SHALL BE RESTRAINED JOINT OR MJ WITH WEDGE ACTION RESTRAINT. BUTT FUSED AND ELECTROFUSED HDPE IS FULLY RESTRAINED
- ALL HARDWARE (BOLT/WASHER/NUT) SHALL BE TYPE 304 STAINLESS STEEL WITH ANTI-SEIZE Β. COMPOUND
- C. SEE CONSTRUCTION PLANS FOR EXACT LOCATIONS OF VALVES AND FIRE HYDRANT.
- D. HYDRANT EXTENSIONS SHALL BE LIMITED TO 1 EACH PER FIRE HYDRANT.





- 1. END OF LINE VALVE-BUTTERFLY OR GATE VALVE
- 2. HDPE WATER MAIN
- 3. FLEX RESTRAINTS FOR HDPE PIPE. SEE STANDARD DETAIL HD4.
- CONCRETE WALL BLOCKING F'C = MINIMUM 3,600 PSI. SEE 4. STANDARD DETAIL HD4.
- 5. BUTT FUSED HDPE END CAP
- 6. MJ ADAPTER WITH STAINLESS STEEL STIFFENER AND ACCESSORY KIT OR BUTT FUSION JOINT AS APPROPRIATE TO VALVE.
- 2 INCH HDPE PIPE 7.
- 8. 2 INCH HDPE 90° BEND
- 2 INCH HDPE NIPPLE LENGTH AS REQUIRED. 9.
- 10. 2-INCH TAPPING TEE OR 4-INCH SADDLE.
- 11. VALVE BOX ASSEMBLY. SEE STANDARD DETAILS HD10, HD11, HD12, AND HD17.
- 12. TRACER WIRE CONTINUOUS AWG NO. 12 GAUGE SOLID COPPER TRACER WIRE WITH 30 MIL THICK BLUE HDPE INSULATION.
- 13. 1 INCH SCH 40 PVC ELECTRICAL CONDUIT. LENGTH AS REQUIRED.
- 14. UNDISTURBED SOIL
- 15. 5 INCH CAST IRON SOIL PIPE, L=15" OR VALVE BOX BOTTOM SECTION.
- TRENCH LIMITS 16.
- 17. CONTROL VALVE
- **18. CONCRETE BEARING BLOCK**







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- WHEN DIRECTED BY THE ENGINEER, THE CONCRETE WALL Α. BLOCK SIZE MAY BE ADJUSTED, BASED ON ACTUAL SOIL CLASSIFICATION AND PIPE DIAMETER.
- B. FOR IN-DITCH FUSION, MINIMUM TRENCH WIDTH TO ACCOMMODATE EQUIPMENT ALLOWED.

OUTLET SIZE TABLE				
MAIN DIAMETER (INCH)	OUTLET NOMINAL DIAMETER (INCH)	CONTROL VALVE		
2 to 20	2-INCH	2-INCH GATE VALVE		
22 to 32	4-INCH	4-INCH GATE VALVE		



NOMINAL CARRIER PIPE (INCHES)	DOT CASING DIAMETER (INCHES)	DOT CASING THICKNESS (INCHES)	RAILROAD CASING DIAMETER (INCHES)	RAILROAD THICKNESS (INCHES)
2	8	0.250	N/A	N/A
3	8	0.250	N/A	N/A
4	8	0.250	N/A	N/A
6	12.75	0.250	16	0.281
8	16	0.250	18	0.312
10	18	0.250	20	0.344
12	20	0.250	24	0.406
14	20	0.250	30	0.469
16	24	0.250	30	0.469
18	24	0.375	36	0.562
20	36	0.375	36	0.562
22	36	0.375	36	0.562
24	36	0.375	36	0.562
26	42	0.500	48	0.750
30	42	0.500	48	0.750
32	42	0.500	48	0.750

MINIMUM SIZE AND THICKNESS STANDARDS FOR CASING PIPE

IER PIPE MUM 35,000 PSI MINIMUM YIELD ABLE FOR THICKNESS. /ITH GROUT (8-INCHES MINIMUM WIDTH). BACK OF CURB. JOUS AWG NO. 12 GAUGE SOLID COPPER IL THICK COLOR-CODED HDPE INSULATION EMBEDMENT LAYER.	STANDARD NO. HD18	VERSION NO. VERSION DATE 1.0 2016-05-12	
DT ALLOWED FOR USE ON HDPE PIPE IN & LONG INSTALLATIONS WITH APPROVAL OF AD FOR PIPE MAY NOT BE EXCEEDED WHEN HROUGH CASING. ROADWAY, 36-INCH AND 42-INCH CASING IS		STEEL CASING FOR HUPE FIFE	
	CHARLOTTE WATER	STANDARD DETAILS HDPE	
	CHARLOTTE		

- HDPE WATER MAIN 1.
- HDPE SERVICE TAPPING SADDLE WITH CAP AND CUTTER 2.
- HDPE WATER TUBING (SDR-9 CTS) 3.
- BUTT FUSION JOINT 4.
- FINISHED GRADE OF STREET 5.
- 5/8" X 3/4" ANGLE BALL VALVE WITH LOCK WINGS, YOKE STAR NUT X CTS 6. COMPRESSION
- WATER METER 7.
- METER BOX ASSEMBLY. SEE STANDARD DETAIL. 8.
- TRACER WIRE CONTINUOUS AWG NO. 12 GAUGE SOLID COPPER TRACER 9. WIRE WITH 30 MIL THICK BLUE HDPE INSULATION
- 10. 5/8-INCH X 3/4-INCH BRASS 90° YOKE STAR NUT X CTS COMPRESSION CONNECTOR
- 11. TYPE K COPPER TUBING OR HDPE SDR-9 (CTS) TUBING WITH INSERT STIFFENERS
- 12. CURB AND GUTTER

A. METER LOCATION WHERE SIDEWALK AND CURB ARE INTEGRAL IS AT BACK OF

CURB AS SHOWN.

APPROVAL

SIDEWALK INSTEAD OF BACK OF

B. ANGLED OPTION IS ONLY ALLOWED WITH CHARLOTTE WATER

NOTES:





OPTION - ANGLED TAPPING SADDLE WITH METER ABOVE MAIN



NOTES:

- A. ALL FLANGE HARDWARE (BOLT/WASHER/NUT) SHALL BE STAINLESS STEEL - TYPE 304 WITH ANTI-SEIZE COMPOUND.
- B. ALL PIPE SHALL BE RESTRAINED FROM TAP TO PROPERTY LINE VALVE.
- C. VAULT SHALL BE RATED FOR NCDOT HS-20 LOADING -SUBMIT SHOP DRAWINGS / P.E. SEALED FOR REVIEW.
- D. ALL CONCRETE SHALL BE MINIMUM 4000 PSI COMPRESSIVE STRENGTH.
- E. DESIGN SHALL CONFORM TO ASTM C858 -SPECIFICATIONS FOR "UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURE".
- F. STEEL REINFORCING DESIGN SHALL CONFORM TO ASTM C857.

- H. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- I. DIAGONAL REINFORCING SHALL BE ADDED AT ALL OPENINGS.
- J. PIPE PENETRATIONS SHALL BE SEALED WITH FLEXIBLE CONNECTERS (MANHOLE BOOTS) OR WITH 4-INCHES OF BRICK & MORTAR (AND 1/2 INCH THICK CONSTRUCTION EXPANSION MATERIAL).
- K. FRAME TO BE FLUSH WITH GROUND OR CONCRETE SIDEWALK, GROUND SHALL SLOPE AWAY FROM VAULT.
- L. ALL JOINTS SHALL BE MADE WATERTIGHT USING 2 RINGS OF BUTYL RUBBER JOINT MASTIC.



- 1. HDPE WATER MAIN
- 2. HDPE SERVICE TA
- HDPE BUTT FUSIO
 BUTT FUSION X TH
- BUTT FUSION X TH
 STANDARD VALVE
 - CORPORATION ST
- 6. 1 1/2" SDR-9 IPS HE
- 7. 1 1/2" BRASS BALL
- 8. 1 1/2" RED BRASS
- 9. 1 1/2" BRASS METE MUELLER #098B 24 MCDONALD #720B6
- 10. 3/4" SCH 40 RED B 11. 1 1/2" WATER MET
- CONTRACTOR)
- 12. BY PASS BALL VAL POSITION (SERIAL CHARLOTTE WATE
- 13. PRECAST CONCRE
- 14. 6" DIAMETER SUM
- 15. 6" COMPACTED #5
- 16. MINIMUM OF (3) ST UNDER ACCESS D
- 17. 24" x 36" ACCESS [
- 18. AMR (ERT) TRANS
- 19. 3/8" DIAMETER GA TYPICAL
- 20. AWG #12 GAUGE S BLUE INSULATION (COILED) AT EYE E
- 21. CAST IN PLACE CO EXTEND TO SURF
- 22. 1 1/2" TYPE K COPI





	ON O		2016-05-12	
HREADED (MNPT) ADAPTER BOX ASSEMBLY (TYP) - ALL VALVES (OMIT AT OP ON SHORT SIDE SERVICE) DPE PIPE VALVE (ENPT X ENPT)	STANDAR		1.0	
PIPE NIPPLE (L = 30") ER SETTER ASSEMBLY - FORD #VB-76-95311-05, 42343, CAMBRIDGE #6020-718F6F6-UUBS OR 618WTFF, NO SOLDER JOINTS PERMITTED BRASS NIPPLE (L=18") x 2 EACH ER ASSEMBLY WITH AMR ERT TRANSMITTER (BY LVE WITH LOCK WINGS - LOCK VALVE IN CLOSED .NUMBERED STUD LOCK - FURNISHED BY ER) ETE SERVICE VAULT (36" x 24" x 31") IP HOLE 57 OR #67 WASHED STONE TANDARD SOLID CONCRETE BRICK COURSES DOOR FRAME, MAXIMUM 2 FT. DOOR - SEE STANDARD DETAIL MITTER LV. STEEL EYE BOLT (ADHESIVE ANCHOR) - SOLID COPPER TRACER WIRE 20 MILS HDPE (THWN) - TERMINATE WITH 24" EXCESS WIRE BOLT AND VALVE BOX (TYP) DNCRETE SIDEWALK - BRICK WORK SHALL NOT	E SERVICE CONNECTION TAP			
PER TUBING TAIL PIECE - L = 24" MIN CAP END			-	
	~			
	CHARLOTTE WATER	STANDARD DETAILS	HDPE - WATER	
4" MIN. 4" MIN. CTION VIEW	CHARLOTTE	WITER		א הידע הב הנואפו הדדב הבמאמדואבוי





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JB, RUBBER SADDLE, AND SS	standard no. HD22	VERSION NO. VERSION DATE 1.0 2016-05-12	-
ELDED TYPE WITH STAINLESS	JOUT AND	BURSTING	
D HOUSING WITH SHEAR BAND. D WITH AN ELASTOMERIC	LEAD	olpE	
ECTIONS ARE NOTED ON THE	R CI	3Y F	
EDED TO MAKE A CONNECTION, CTROFUSION COUPLINGS CONSIST OF A FUSION SADDLE ER AT ITS OUTLET.	CH TO 6-INCH SEWER	RAL ON HDPE PIPE E	
ITO EXISTING LATERAL INTO EWER NEW HDPE OR PVC SEWER	4-IN(LATE	
	CHARLOTTE WATER	STANDARD DETAILS HDPE - SEWER	-
W OR EXISTING WER MAIN (HDPE)	CHARLOTTE		





- 1. EXISTING HDPE WATER MAIN
- 2. WRAP AROUND REPAIR CLAMP
- 3. SOLID RESTRAINED SLEEVE

SMALL PUNCTURE REPAIR NOTES:

- A. SMALL PUNCTURE DAMAGE IS DEFINED AS ONE INCH OR SMALLER PUNCTURE IN ONE PIPE WALL.
- B. PREFFERED REPAIR METHOD FOR SMALL PUNCTURE IS ELECTROFUSION PATCH. MECHANICAL COUPLING IS ALLOWED WHEN PIPE CAN NOT BE DRIED, UPON APPROVAL OF CHARLOTTE WATER INSPECTOR.
- C. BEFORE ADDING FITTING, DRILL SMALL HOLE AT EACH END OF DAMAGE TO PREVENT CRACK PROPAGATING.
- D. FITTINGS SHALL MEET THE REQUIREMENTS OF AWWA C906.
- E. MECHANICAL FITTINGS USED WITH HDPE PIPE SHALL BE SPECIFICALLY DESIGNED FOR USE WITH HDPE PIPE.
- F. MINIMUM CLAMP WIDTH IS 12-INCHES. MINIMUM CLAMP WIDTH IS 5-INCHES ON EITHER SIDE OF PUNCTURE, FOR 10" NOMINAL DIAMETER PIPE AND LARGER.

S ER)			NO S	CALE
			STAND	ARD NO.
CHARLOTTE	CHARLOTTE WATER	EXISTING HDPE PIPE REPAIR	Ŧ	024
VCIEK	STANDARD DETAILS	(MAINTENANCE REPAIRS ONLY)	VERSION NO.	VERSION DATE
)	HDPE		1.0	2016-05-12

NOTES TO DESIGNER A. REFER TO PPI TN-34 (INSTALLATION GUIDELINES FOR ELECTROFUSION COUPLINGS 14" AND LARGER



- 1. HDPE WATER MAIN CARRIER PIPE
- 2. VALVE
- 3. HDPE RESTRAINED JOINT ADAPTER WITH STEEL PIPE STIFFENER

NOTES:

- A. FITTINGS SHALL MEET THE REQUIREMENTS OF AWWA C906.B. MECHANICAL FITTINGS USED WITH HDPE PIPE SHALL BE
 - SPECIFICALLY DESIGNED FOR USE WITH HDPE PIPE.
- C. STAINLESS STEEL INTERNAL STIFFENERS SHALL BE INSTALLED IN THE END OF THE HDPE PIPE WHEN HDPE PIPE IS INSERTED INTO THE BELL END OF NON-HDPE PIPE, VALVE, FITTING, OR INTO THE HUB OF A BOLTED COUPLING
- D. ALLOWABLE TENSILE LOAD FOR PIPE MAY NOT BE EXCEEDED WHEN PULLING CARRIER PIPE THROUGH HORIZONTAL DIRECTIONAL DRILL (HDD). PROVIDE SEALED CALCULATIONS.
- E. LOCATE VALVES IN ACCESSIBLE LOCATION AT TOP OF BANK WITHIN 100 TO 1,000 LINEAR FEET OF TOP OF BANK ON BOTH SIDES OF CENTERLINE OF CREEK.

NOTES TO DESIGNER

- A. CALL OUT TYPE OF
- B. PROVIDE DESIGN C
 - FOR USE OF MAXI-H PLACEMENT OF PE
 - **RIVER CROSSINGS.**
 - FORCE, TENSILE ST
 - THERMAL STRESSE
- C. PROVIDE SEALED F THE MINIMUM REQU HANDBOOK OF POL

NO SCALE	STANDARD NO.	HD25	VERSION NO. VERSION DATE	1.0 2016-05-12
UNALVE ON PLANS. ALCULATIONS PER ASTM F1962, STANDARD GUIDE IORIZONTAL DIRECTIONAL DRILLING FOR PIPE OR CONDUIT UNDER OBSTACLES, INCLUDING PROVIDE SEALED CALCULATIONS FOR PULLBACK RESS, EXTERNAL PRESSURE, BENDING STRESS, S AND STRAINS, AND TORSION STRESS. LOTATION DESIGN CALCULATIONS COMPLYING WITH	CHARLOTTE WATER		STANDARD DETAILS	HDPE
YETHYLENE PIPE" REVISION 3 OR LATER BY PPI.	CHARLOTTE			,

יודע הב הנוע ומאווה הבטאוראוי